

FIG. 1a

E.c. β -Gluc for: 5' AAG CTT TCA TTG TTT GCC TCC CTG CTG CGG 3'

E.c. β -Gluc back: 5' TCI AGA CCA TGG TAC GTC CTG TAC AAA CCC CA 3'

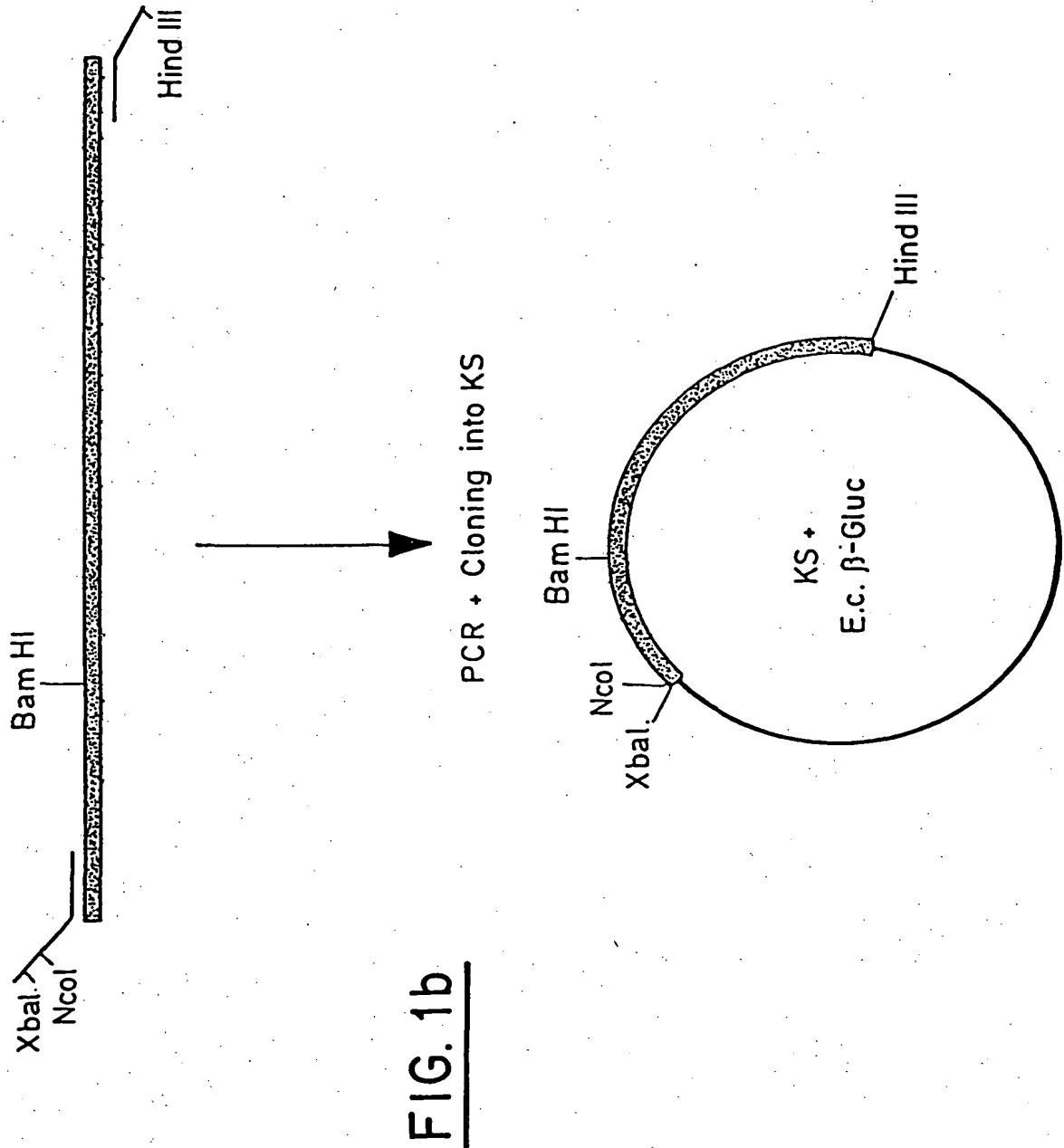


FIG. 2a

Fab HC for: 5' GAA TTC CAT GGA ACC AGA ACC AGA ACC GAG CTC AAC TCT N2
link
CTT GTC CAC CTT GGT GTT 3'
CH1

Fab HC back: 5' ICT AGA TAA CGA GGG CAA AAAATG GAG GTC CAA CTG CAG N2b
SD
GAG AGC 3' VH

FIG. 2b

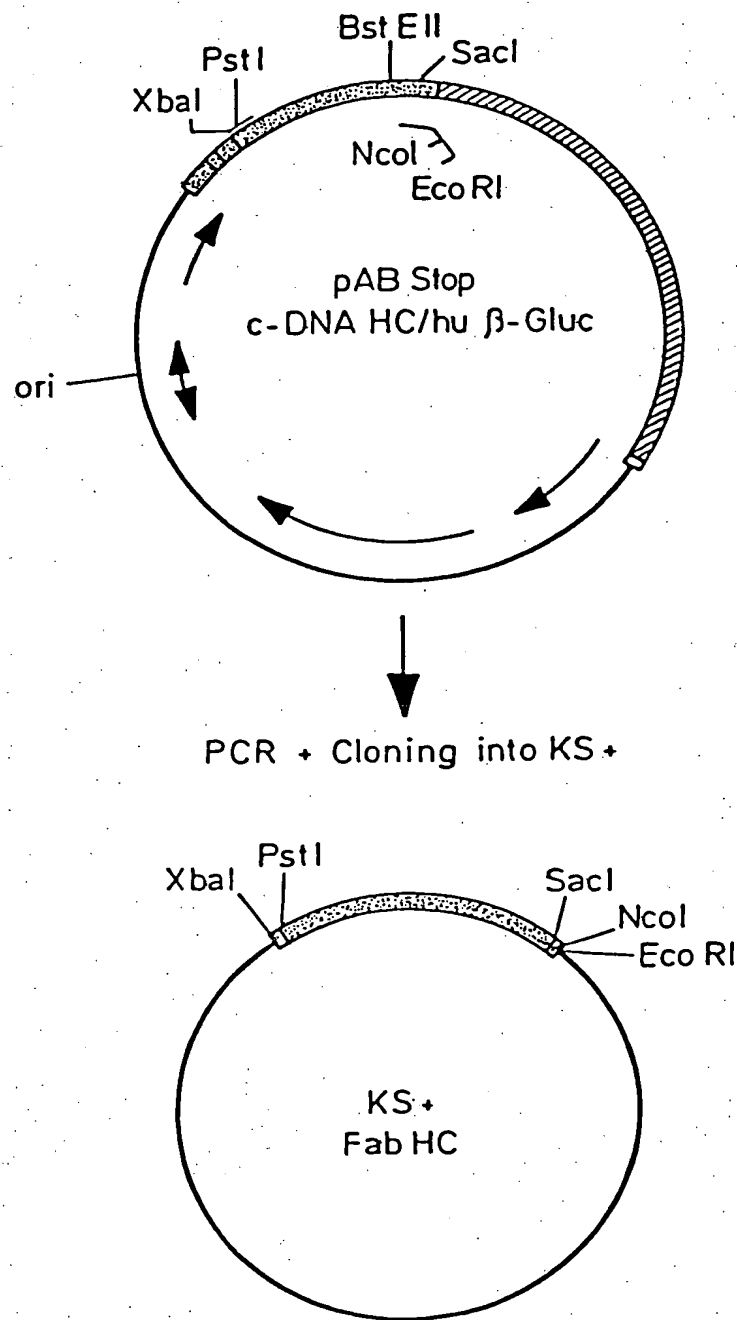
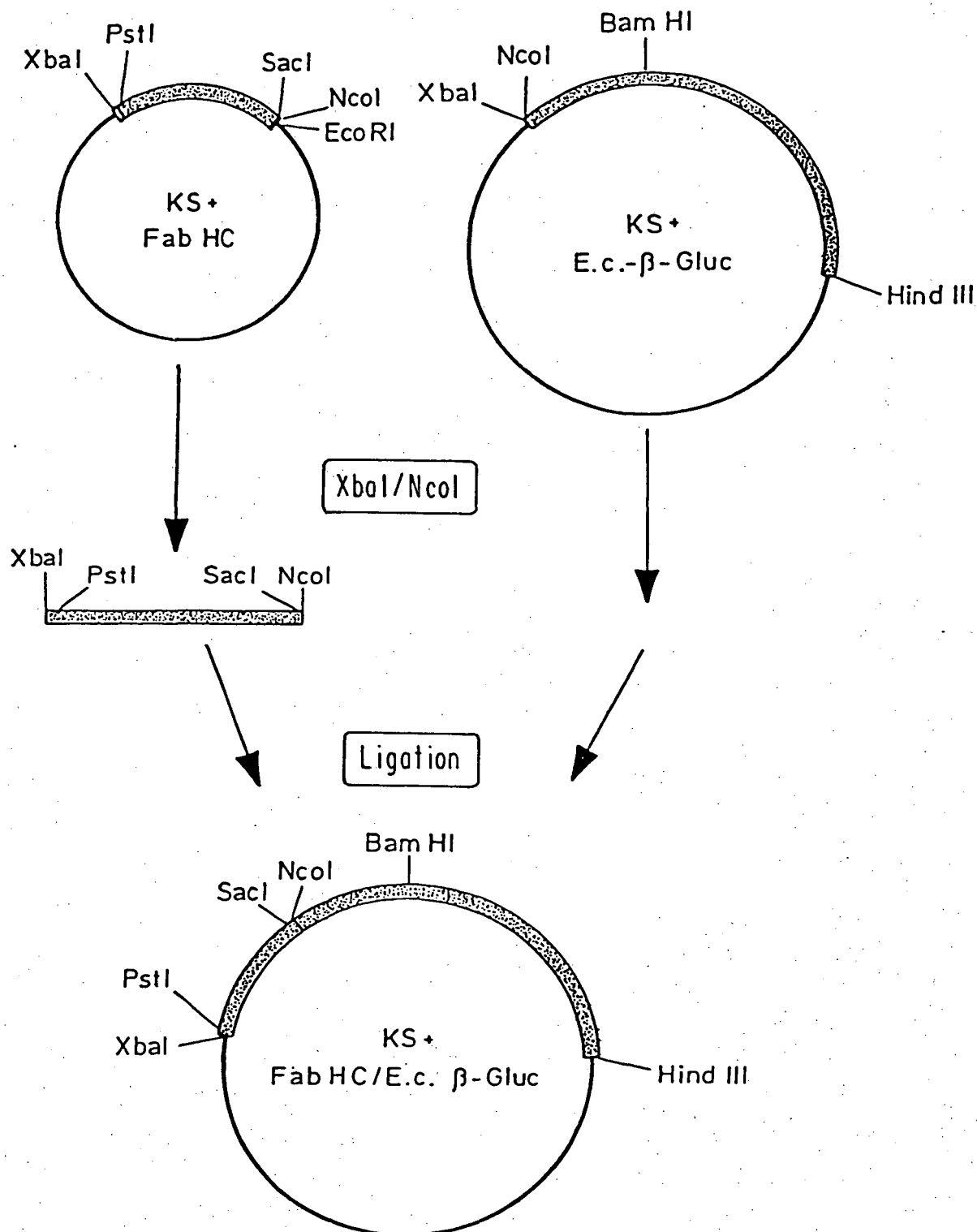


FIG. 3



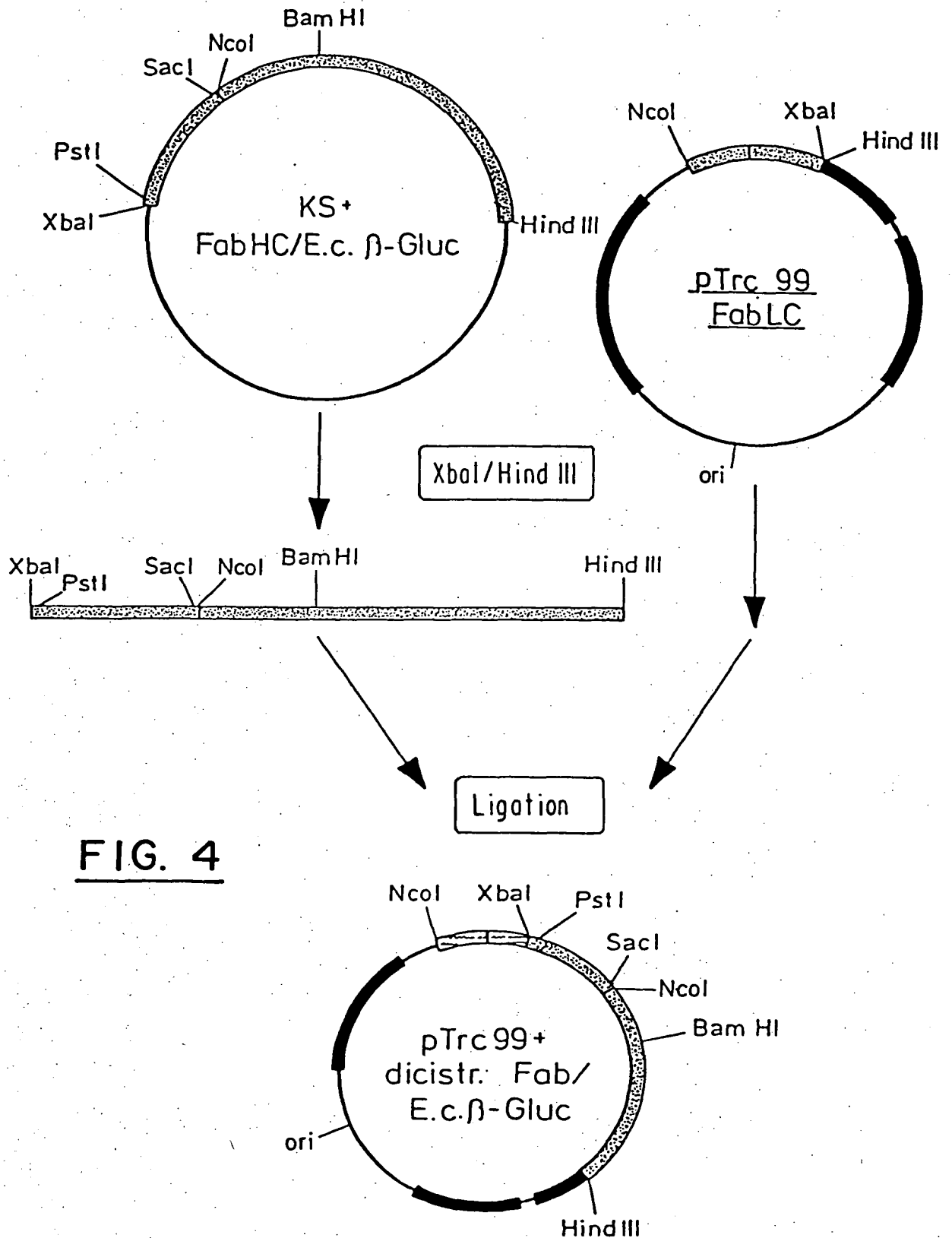


FIG. 4

431/26 hum dicistr. Fab/E.c.β - Glucuronidase in pTrc 99

FIG. 5a

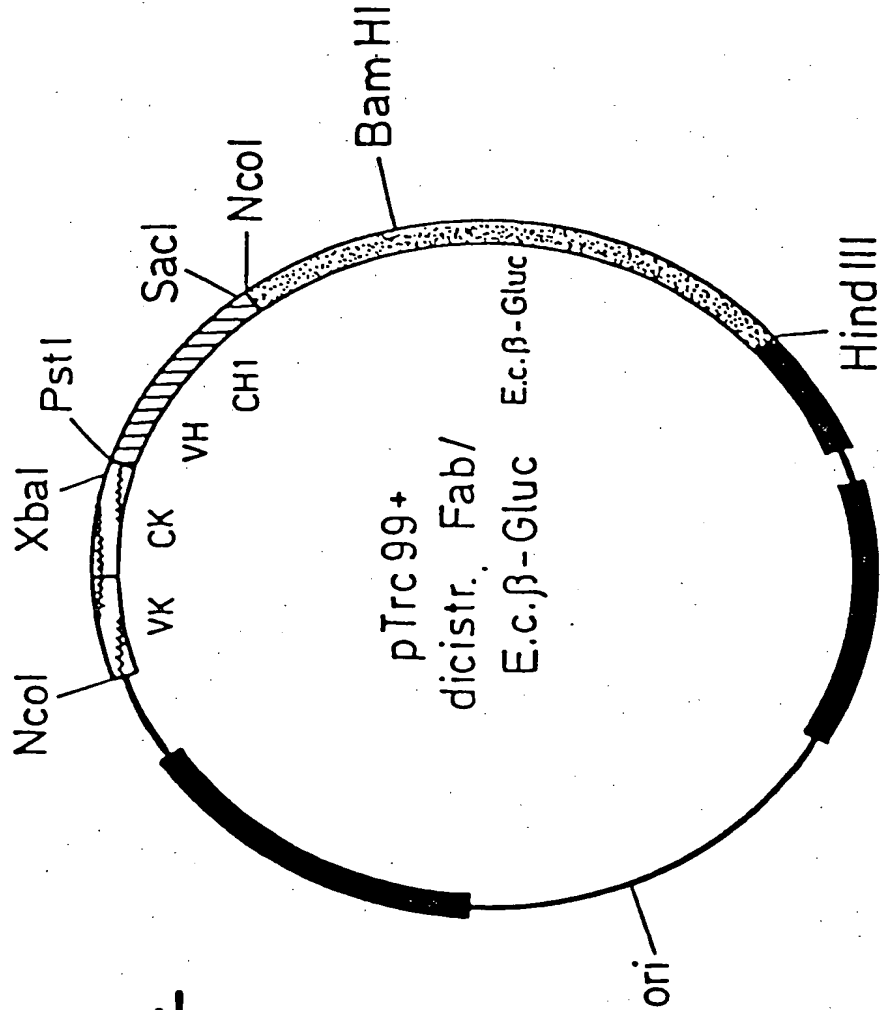


FIG. 5b

NcoI

1 CC ATG GAC ATC CAG ATG ACC CAG AGC CCA AGC AGC CTG ACC GCC AGC GTG GGT GAC AGA
 11 Met Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg N5

60 GTG ACC ATC ACC TGT AGT ACC AGC TCG AGT GTA AGT TAC ATG CAC TGG TAC CAG CAG AAG
 20 Val Thr Ile Thr Cys Ser Thr Ser Ser Val Ser Tyr Met His Trp Tyr Gln Gln Lys

120 CCA GGT AAG GCT CCA AAG CTG ATC TAC AGC ACA TCC AAC CTG GCT TCT GGT GTG CCA VK
 40 Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro

180 AGC AGA TTC AGC GGT AGC GGT ACC GAC TTC ACC TTC ACC ATC AGC AGC CTC CAG
 60 Ser Arg Phe Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln

240 CCA GAG GAC ATC GCC ACC TAC TAC TGC CAT CAG TGG AGT AGT TAT CCC ACG TTC GGC CAA
 80 Pro Glu Asp Ile Ala Thr Tyr Tyr Cys His Gln Trp Ser Ser Tyr Pro Thr Phe Gly Gln

300 GGG ACC AAG GTG GAA ATC AAA CGT ACT GTG GCT GCA CCA TCT GTC TTC ATC TTC CCG CCA
 100 Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro

FIG. 5c

360 TCT GAT GAG CAG TTG AAA TCT GGA ACT GCC TCT GTT GTG TGC CTG CTG CTG AAT AAC TTC TAT
 120 Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr

420 CCC AGA GAG GCC AAA GTA CAG TGG AAG GTG GAT AAC GCC CTC CAA TCG GGT AAC TCC CAG
 140 Pro Arg Glu Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Ser Gly Asn Ser Gln

480 GAG AGT GTC ACA GAG CAG GAC AGC AAG GAC AGC ACC TAC AGC CTC AGC AGC ACC CTG ACG
 160 Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Thr Leu Thr

540 CTG AGC AAA GCA GAC TAC GAG AAA CAC AAA GTC TAC GCC TGC GAA GTC ACC CAT CAG GGC
 180 Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly

600 CTG AGC TCG CCC GTC ACA AAG AGC TTC AAC AGG GGA GAG TGT TAG TCTAGATAACGAGGCGCAA
 200 Leu Ser Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys ...

PsII
 664 AA ATG GAG GTC CAA CTG CAG GAG AGC GGT CCA GGT CTT GTG AGA CCT AGC CAG ACC CTG
 1 Met Glu Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Arg Pro Ser Gln Thr Leu

CK

FIG. 5d

723 AGC CTG ACC TGC ACC GTG TCT GGC TTC ACC ATC ACC AGT GGT TAT AGC TGG CAC TGG GTG
20 Ser Leu Thr Cys Thr Val Ser Gly Phe Thr Ile Ser Ser Gly Tyr Ser Trp His Trp Val
783 AGA CAG CCA CCT GGA CGA GGT CTT GAG TGG ATT GGA TAC ATA CAG TAC AGT GGT ATC ACT
40 Arg Gln Pro Pro Gly Arg Gly Leu Glu Trp Ile Gly Tyr Ile Gln Tyr Ser Gly Ile Thr
843 AAC TAC AAC CCC TCT CTC AAT AGT AGA GTG ACA ATG CTG GTA GAC ACC AGC AAC AAC CAG
60 Asn Tyr Asn Pro Ser Leu Lys Ser Arg Val Thr Met Leu Val Asp Thr Ser Lys Asn Gln
903 TTC AGC CTG AGA CTC AGC AGC GTG ACA GCC GGC GAC ACC GCG GTC TAT TAT TGT GCA AGA
80 Phe Ser Leu Arg Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg
963 GAA GAC TAT GAT TAC CAC TGG TAC TTC GAT GTC TGG GGT CAA GGC AGC CTC GTC ACA GTC
100 Glu Asp Tyr Asp Tyr His Trp Tyr Phe Asp Val Trp Gly Gln Gly Ser Leu Val Thr Val
1023 ACA GTC TCC TCA GCT TCC ACC AAG GGC CCA TGG GTC TTC CCC CTG GCG CCC TGC TCC AGG
120 Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg
1083 AGC ACC TCT GGG GGC ACA GCG GCC CTG GGC TGC GTC AAG GAC TAC TTC CCC GAA CCG
140 Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro

VH

CH1

FIG. 5e

1143 GTG ACG GTG TCG TGG AAC TCA GGC GCC CTG ACC AGC GGC GTG CAC ACC TTC CCG GCT GTC
 160▶ Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val

1203 CTA CAG TCC TCA GGA CTC TAC TCC CTC AGC AGC GTG GTG ACC GTG CCC TCC AGC AGC TTG
 180▶ Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu

1263 GGC ACC CAG ACC TAC ACC TCC AAC GTG AAT CAC NAG CCC AGC AAC ACC AAG GTG GAC AAG
 200▶ Gly Thr Gln Thr Tyr Thr Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
 link

SacI NcoI
 1323 AGA GTT GAG CTC GGT TCT GGT TCT TCC ATG GTA CCT GTA GAA ACC CCA ACC CTT
 220▶ Arg Val Glu Leu Gly Ser Gly Ser Gly Ser Met Val Arg Pro Val Glu Thr Pro Thr Arg

1383 GAA ATC AAA NAA CTC GAC GCC CTG TGG GCA TTC AGT CTG GAT CGC GAA AAC TGT GGA ATT
 240▶ Glu Ile Lys Lys Leu Asp Gly Leu Trp Ala Phe Ser Leu Asp Arg Glu Asn Cys Gly Ile

1443 GAT CAG CGT TGG TGG GAA AGC GCG TTA CAA GAA ACC CCG GCA ATT GCT GTG CCA GGC AGT
 260▶ Asp Gln Arg Trp Trp Glu Ser Ala Leu Gln Glu Ser Arg Ala Ile Ala Val Pro Gly Ser

1503 TTT AAC GAT CAG TTC GCC GAT GCA GAT ATT CGT AAT TAT CCG GCC AAC GTC TCG TAT CAG
 280▶ Phe Asn Asp Gln Phe Ala Asp Ala Asp Ile Arg Asn Tyr Ala Gly Asn Val Trp Tyr Gln

E.c. β-Gluc

FIG. 5f

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1563 CCG GAA GTC TTT ATA CCG AAA GGT TGG GCA GGC CAG CGT ATC GTG CTG CGT TTC GAT CCG
300> Arg Glu Val Phe Ile Pro Lys Gly Trp Ala Gly Gln Arg Ile Val Leu Arg Phe Asp Ala

1623 GTC ACT CAT TAC GGC AAA GTG TGG GTC AAT AAT CAG GAA GTG ATG GAG CAT CAG GGC GGC
320> Val Thr His Tyr Gly Lys Val Trp Val Asn Asn Gln Glu Val Met Glu His Gln Gly Gly

1683 TAT ACG CCA TTT GAA GCC GAT GTC ACG CCG TAT GTT ATT GCC GCG AAA AGT GTA CGT ATC
340> Tyr Thr Pro Phe Glu Ala Asp Val Thr Pro Tyr Val Ile Ala Gly Lys Ser Val Arg Ile

1743 ACC GTT TGT GTG AAC AAC GAA CTG AAC TGG CAG ACT ATC CCG CCG GGA ATG GTG ATT ACC
360> Thr Val Cys Val Asn Asn Glu Leu Asn Trp Gln Thr Ile Pro Pro Gly Met Val Ile Thr

1803 GAC GAA AAC GGC AAG AAA AAG CAG TCT TAC TTC CAT AAT TTC TTT AAC TAT GCC GCG ATC
380> Asp Glu Asn Gly Lys Lys Lys Gln Ser Tyr Phe His Asn Phe Phe Asn Tyr Ala Gly Ile

1863 CAT CCG ACC GTA ATG CTC TAC ACC ACG CCG AAC ACC TGG GTG GAC GAT ATC ACC GTG GTG
400> His Arg Ser Val Met Leu Tyr Thr Thr Pro Asn Thr Trp Val Asp Asp Ile Thr Val Val

1923 ACG CAT GTC CCG CAA GAC TGT AAC CAC CCG TCT GTT GAC TGG CAG GTG GCC AAT GGT
420> Thr His Val Ala Gln Asp Cys Asn His Ala Ser Val Asp Trp Gln Val Val Ala Asn Gly
  
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BamHI

FIG. 5g

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1983 GAT GTC AGC GTT GAA CTG CGT GAT GCG GAT CAA CAG GTG GTT GCA ACT GGA CAA GGC ACT
440> Asp Val Ser Val Glu Leu Arg Asp Ala Asp Gln Gln Val Val Ala Thr Gly Gln Gly Thr

2043 ACC GGG ACT TTG CAA GTG GTG AAT CCG CAC CTC TGG CAA CCG GGT GAA GGT TAT CTC TAT
460> Ser Gly Thr Leu Gln Val Val Asn Pro His Leu Trp Gln Pro Gly Glu Gly Tyr Leu Tyr

2103 GAA CTG TGC GTC ACA GCC AAA AGC CAG ACA GAG TGT GAT ATC TAC CCG CTT CCG GTC GGC
480> Glu Leu Cys Val Thr Ala Val Thr Ala Lys Ser Gln Thr Glu Glu Cys Asp Ile Tyr Pro Leu Arg Val Gly

2163 ATC CCG TCA GTG GCA GTG AAG GGC GAA CAG TTC CTG ATT AAC CAC AAA CCG TTC TAC TTT
500> Ile Arg Ser Val Ala Val Lys Gly Glu Gln Phe Leu Ile Asn His Lys Pro Phe Tyr Phe

2223 ACT GGC TTT GGT CGT CAT GAA GAT GCG GAC TTA CGT GGC AAA GGA TTC GAT AAC GTG CTG
520> Thr Gly Phe Gly Arg His Glu Asp Ala Asp Leu Arg Gly Lys Gly Phe Asp Asn Val Leu

2283 ATG GTG CAC GAC CAC GCA TTA ATG GAC TGG ATT GGG GCC AAC TCC TAC CGT ACC TCG CAT
540> Met Val His Asp His Ala Leu Met Asp Trp Ile Gly Ala Asn Ser Tyr Arg Thr Ser His
  
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FIG. 5h

2343 TAC CCT TAC GCT GAA GAG ATG CTC GAC TGG GCA GAT GAA CAT GGC ATC GTG GTG ATT GAT
560 Tyr Pro Tyr Ala Glu Glu Met Leu Asp Trp Ala Asp Glu His Gly Ile Val Val Ile Asp

2403 GAA ACT GCT GCT GTC GGC TTT AAC CTC TCT TTA GGC ATT GGT TTC GAA GCG GGC AAC AAG
580 Glu Thr Ala Ala Val Gly Phe Asn Leu Ser Leu Gly Ile Gly Phe Glu Ala Gly Asn Lys

2463 CCG AAA GAA CTG TAC AGC GAA GAG GCA GTC AAC GGG GAA ACT CAG CAA CCG CAC TTA CAG
600 Pro Lys Glu Leu Tyr Ser Glu Glu Ala Val Asn Gly Glu Thr Gln Gln Ala His Leu Gln

2523 GCG ATT AAA GAG CTG ATA GCG CGT GAC AAA AAC CAC CCA AGC GTG GTG ATG TGG AGT ATT
620 Ala Ile Lys Glu Leu Ile Ala Arg Asp Lys Asn His Pro Ser Val Val Met Trp Ser Ile

2583 GCC AAC GAA CCG GAT ACC CGT CCG CAA GGT GCA CCG GAA TAT TTC GCG CCA CTG GCG GAA
640 Ala Asn Glu Pro Asp Thr Arg Pro Gln Gly Ala Arg Glu Tyr Phe Ala Pro Leu Ala Glu

2643 GCA ACG CGT AAA CTC GAC CCG ACG CGT CCG ATC ACC TGC GTC AAT GTA ATG TTC TGC GAC
660 Ala Thr Arg Lys Leu Asp Pro Thr Arg Pro Ile Thr Cys Val Asn Val Met Phe Cys Asp

2703 CCT CAC ACC GAT ACC ATC AGC GAT CTC TTT GAT GTG CTG TGC CTG AAC CGT TAT TAC CGA
680 Ala His Thr Asp Thr Ile Ser Asp Leu Phe Asp Val Leu Cys Leu Asn Arg Tyr Tyr Gly

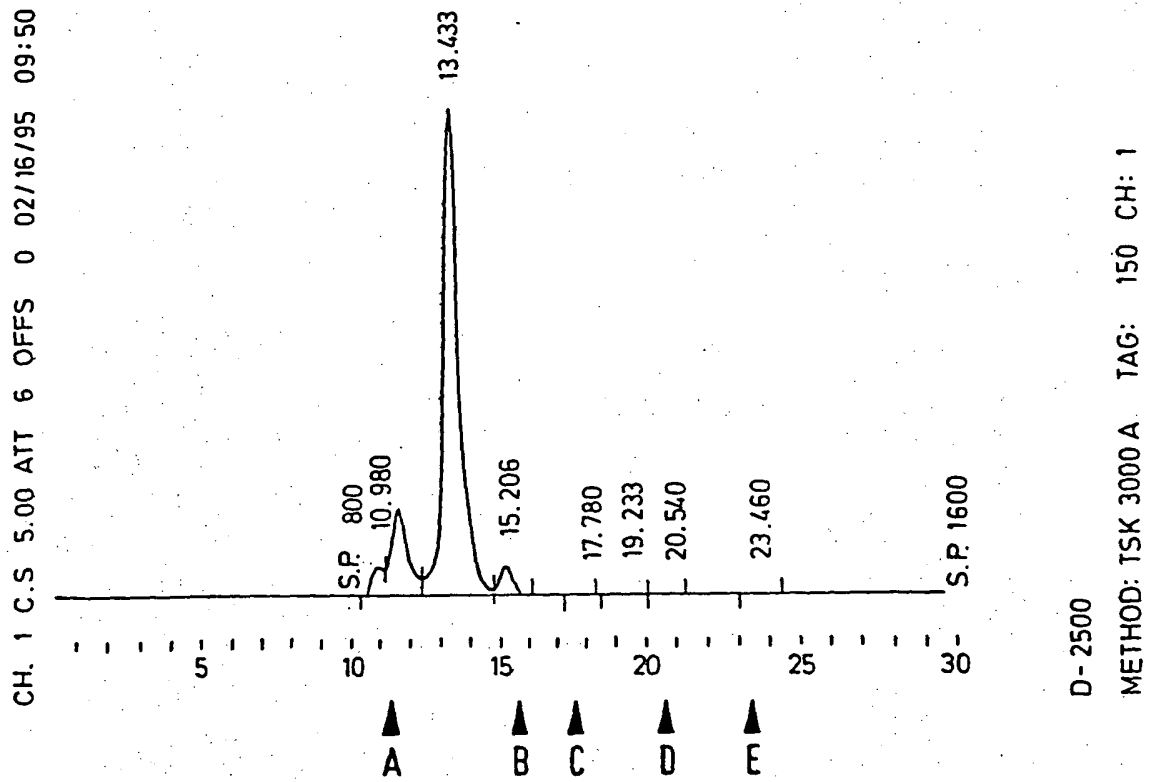
2763 TGG TAT GTC CAA AGC GGC GAT TTG GAA ACG GCA GAG AAG GTA CTG GAA AAA GAA CTT CTG
700 Trp Tyr Val Gln Ser Gly Asp Leu Glu Thr Ala Glu Lys Val Leu Glu Lys Glu Leu Leu

FIG. 5i

2823	GCC	TGG	CAG	GAG	AAA	CTG	CAT	CAG	CCG	ATT	ATC	ATC	ACC	GAA	TAC	GGC	GTG	GAT	ACG	TTA
720	Ala	Trp	Gln	Glu	Lys	Leu	His	Gln	Pro	Ile	Ile	Ile	Thr	Glu	Tyr	Gly	Val	Asp	Thr	Leu
2883	GCC	GGG	CTG	CAC	TCA	ATG	TAC	ACC	GAC	ATG	TGG	AGT	GAA	GAG	TAT	CAG	TGT	GCA	TGG	CTG
740	Ala	Gly	Leu	His	Ser	Met	Tyr	Thr	Asp	Met	Trp	Ser	Glu	Glu	Tyr	Gln	Cys	Ala	Trp	Leu
2943	GAT	ATG	TAT	CAC	CGC	GTC	TTT	GAT	CGC	GTC	AGC	GCC	GTC	GTC	GGT	GAA	CAG	GTA	TGG	AAT
760	Asp	Met	Tyr	His	Arg	Val	Phe	Asp	Arg	Val	Ser	Ala	Val	Val	Gly	Glu	Gln	Val	Trp	Asn
3003	TTC	GCC	GAT	TTT	CGC	ACC	TCG	CAA	GGC	ATA	TTG	CGC	GTT	GGC	GGT	AAC	AAG	AAA	GGG	ATC
780	Phe	Ala	Asp	Phe	Ala	Thr	Ser	Gln	Gly	Ile	Leu	Arg	Val	Gly	Gly	Asn	Lys	Lys	Gly	Ile
3063	TTC	ACT	CGC	GAC	CGC	AAA	CCG	AAG	TCG	CGC	GCT	TTT	CTG	CTG	CAA	AAA	CCG	TGG	ACT	GGC
800	Phe	Thr	Arg	Asp	Arg	Lys	Pro	Lys	Ser	Ala	Ala	Phe	Leu	Leu	Gln	Lys	Arg	Trp	Thr	Gly
3123	ATG	AAC	TTC	GGT	GAA	AAA	CCG	CAG	CAG	GGA	GGC	AAA	CAA	TGA	AGCTT					
820	Met	Asn	Phe	Gly	Glu	Lys	Pro	Gln	Gln	Gly	Gly	Lys	Gln	...						

HindIII

FIG. 6



TSK - 3000 Gel chromatography. Retention time of the fusion protein, 13.4 min.
A: Thyroglobulin 670.000 D
B: Gamma - Globulin 158.000 D
C: Ovalbumin 44.000 D
D: Myoglobin 17.000 D
E: Vitamin B-12 1.350 D